



Crypto-Polls

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ABSTRACT:

A blockchain-based crypto voting system is a new type of voting system that utilises distributed ledger technology to provide a secure, transparent, and immutable platform for conducting elections. The system uses cryptographic algorithms to ensure the privacy and security of the voting process. Since the blockchain is a decentralized network, it is highly resistant to hacking and manipulation, making it an ideal platform for conducting secure and transparent elections. The thought of Bitcoin started as a means of making a secure currency that had decentralized control. This project explains Blockchain and how Blockchain evolved as a core technology of Bitcoin and earned a significant attraction for entrepreneurs and researchers nowadays.

Keywords: Blockchain, Distributed, Immutable, Decentralized, Cryptographic, Entrepreneurs.

I. Introduction

In a democratic society where everyone aspires for more equality, fraternity, decentralization of power, the secularization of society, and no exploitation along with a happier and prosperous society; a panacea to all such aspirations is a simple social-political system called democracy. Although many countries have proclaimed themselves as democratic in their nature; their election systems are flawed and treat the mandate of people according to their needs and demands. Thus the elections held in such countries are at the whims and fancies of their leaders. Thus ensuring a free and fair election in a secure way is at the heart of robust democracy. The reason behind our project selection was to enable a web application where people can cast their votes according to their respective choices to whoever they want to elect in the elections. We took the help of blockchain technology as it ensures a decentralized and secured collection of votes.

Every person who is going to cast his vote will be given a unique id which he will be using to cast his vote. As soon he enters the website after logging the unique id the person will be made visible to all candidates who are appearing as candidates in the election and the user(citizen) can cast his vote according to his choice after casting his vote he is logged out and his/her mandate is stored in secured and encrypted in the ledger.

The main reason behind the topic selection was that the contemporary election process does not make a fair deal to the people who are migrants or not available on voting day to the booth due to some exigencies, with the help of the internet they can now cast their vote from the location of their compatibility and ensuring participation of all in the democratic process. The reason for choosing blockchain technology was to provide a secured and encrypted storage of votes in a distributed ledger system and thus ensuring the security of the votes cast. The various features of blockchain technology like high availability, transparency, and verifiability also make it go in tandem with our project.

II. Literature Review

The study of approaches given by various developers and the shortcomings of those approaches inspire us to develop a completely user-friendly and knowledgeable giving site that generates reliable results. There are many organizations and websites which are working on conducting the elections in a more secure and encrypted manner. We have referred to some research done on making an online voting system where people can easily cast their votes and ensure their participation in elections.

A. Blockchain-based voting system:

Andrea Pinna, Maria Ilaria Lunesu, Filippo Eros Pani and Francesco Fusco discuss in their paper that provides a comprehensive survey of blockchain-based e-voting systems. The authors discuss the benefits of blockchain-based voting, including security, transparency, and immutability. They also identify several challenges, such as scalability, privacy, and regulatory issues. The paper concludes by suggesting that blockchain-based e-voting has the potential to revolutionize the voting process.

B. A Survey of Blockchain Voting Systems:

This survey paper examines the existing blockchain-based and thus allows voting systems, highlighting their features, security, and usability. The authors discuss the advantages of blockchain-based voting systems, such as transparency, immutability, and resistance to hacking. However, they also identify the limitations, including scalability, privacy, and legal issues.

C. **Blockchain Voting with Privacy-Preserving and Verifiable Counting:** This paper proposes a blockchain-based voting system that provides privacy, verifiability, and immutability. The authors introduce a new consensus which allows the protocol called "Proof-of-Eligibility," which ensures that only eligible voters can participate in the voting process. They also introduce a privacy-preserving protocol that allows voters to cast their ballots anonymously while maintaining the verifiability of the voting process..

D. **A Blockchain-Based Voting Protocol:**

This paper proposes a blockchain-based voting protocol that is resistant to coercion and provides receipt-freeness. The authors introduce a new cryptographic technique called "blind signature," which allows voters to cast their ballots without revealing their preferences. They also propose a vote shuffling technique that prevents vote buying and coercion.

E. **Decentralized e-Voting System Using Smart Contracts:**

This paper proposes a decentralized e-voting system that uses smart contracts and blockchain technology to ensure transparency and security. The authors introduce a new consensus protocol called "Proof-of-Consent," which ensures that voters consent to the voting process before casting their ballots. They also introduce a vote verification protocol that allows voters to verify that their vote was counted correctly.

III. Proposed System

A. **Architecture:**

The proposed system is simple, manageable and easy to use. The proposed system deals with a web application in which users will be able to cast his/her votes with the help of a network thus solving the problem of remoteness and the inability of a person to come to the booth and cast his vote. The web application has a web page where the user enters through a login and then they cast a vote and they log out from the application. The user home page has an admin login which gives secured access to the ledger section which in turn shows the results of the votes which are cast. The administrator has also been given authority to manage the number of voters as well as the management of candidates and also decide which candidate's name should be visible on the website for the user who comes to cast a vote.

B. **Methods:**

The steps performed to develop this project named as Crypto-Polls and the various functionalities of this project are as follows:

1. **Home Page:** On entering the application the user lands on a homepage in which there is a login page and a registration page. Each user is provided with a unique login id so that no intermixing of id's occurs and no hampering happens to the vote cast. If the user is new to the application and hasn't done registration before then he can click on the registration page and have a new registration done by providing the details asked in the form. The entries filled in the form should be authentic as the information will serve as the basis for his/her vote identity. The home page serves as the first page which the user encounters while registering on the web application. The unique id provided to the user must be used for logging into the vote casting.

2. **Voter Login:** As soon as the voter enters his unique id and logs into the site he comes across the most important part of this application regarding the casting of votes and he comes across the various electoral candidate's lists and their respective party symbols where he chooses according to his internal will and wish and thus clicks on the respective candidate's name and party symbol and then the message comes that the vote has been recorded successfully and thus the website immediately after the message appearance takes the user to the logout page where he logs out of the application and thus completing his voting process.

3. **Admin Login:** Since the votes counting and their declaration to the concerned stakeholders is done by an admin authority who will be entitled to have a login into the database which will include various functionalities like candidate management, the main part which is voter management, result and view ledgers option which are the functionalities provided to administrator so that he can access the system and verify the no. of votes that are polled and the no. of people who have casted votes are in equal relation and also the results which person from which party has won the election.

Illustrations:

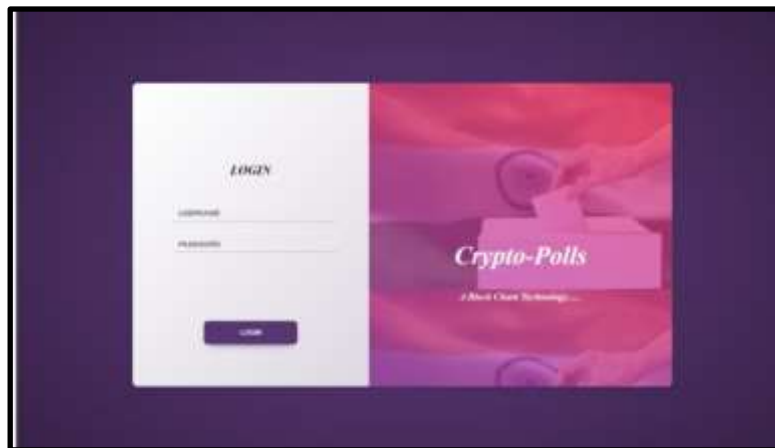


Fig.1 Login Form For Users

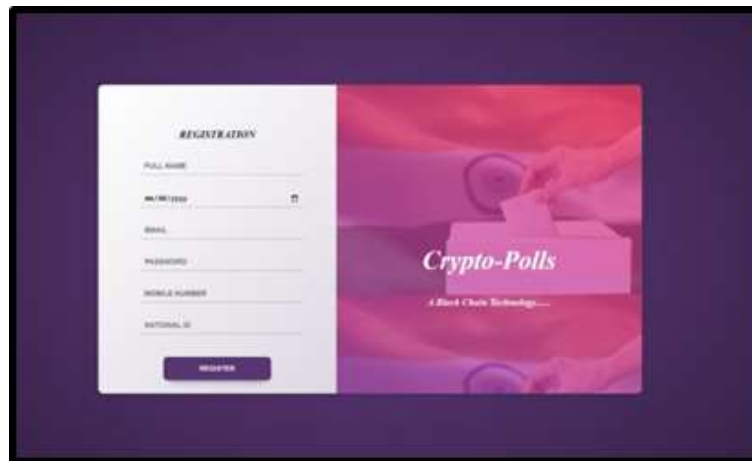


Fig.2 Registration Form For Users



Fig.3 Candidate List For Voting

Candidate	Votes
Kiran Thakur	1108
Arjun Singh	958
Ravi Kumar	1118
Arjun Thakur	1108
Ravi Kumar	1108
Arjun Singh	1108
Arjun Singh	1108
Winner Name	Total Votes
Kiran Thakur	1108

Fig.4 Result Declaration

IV. Diagrams

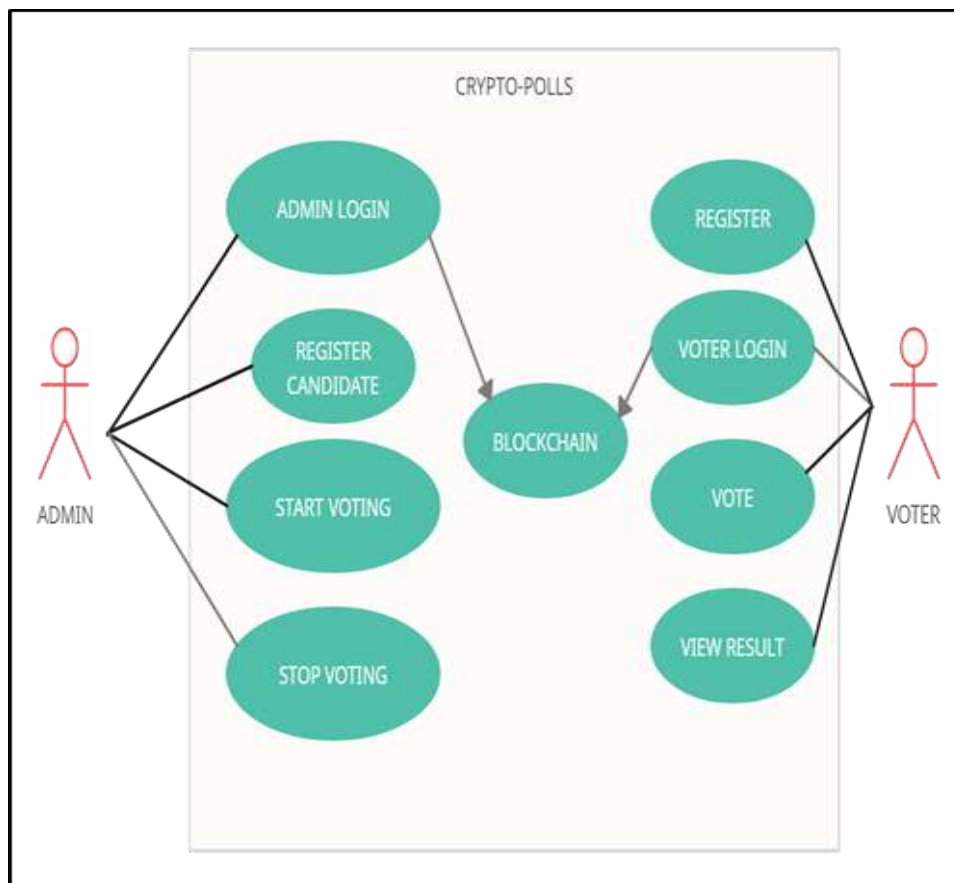


Fig.5 Use Case Diagram Of Crypto Polls

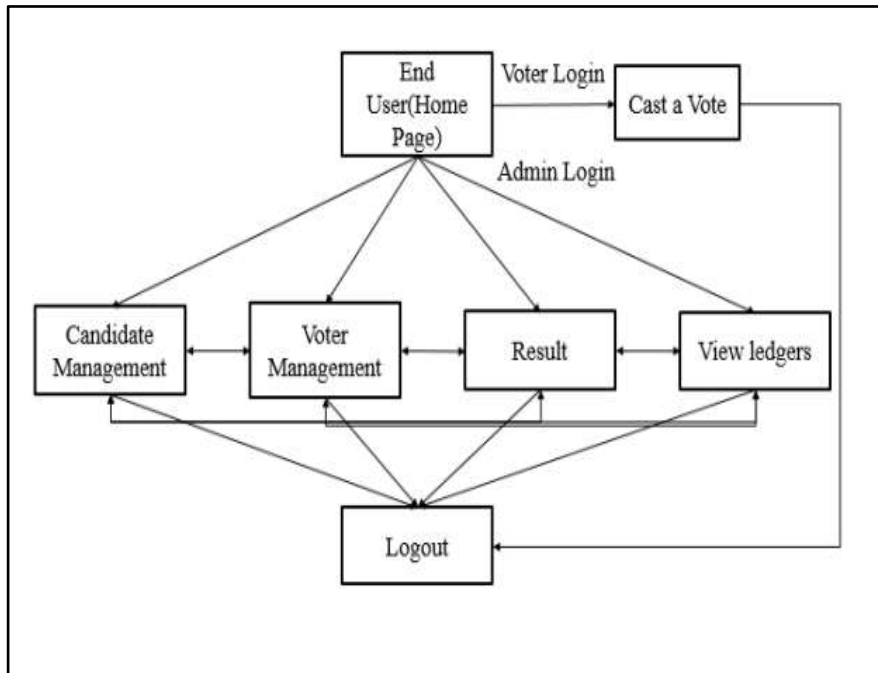


Fig.6 Flow Chart Of Crypto Polls

Data Set - The following list shows the data sets that we have used in this project and the Ethereum account numbers which are used in the project are as follows;

- 1.AmanSoni- 0xb794f5ea0ba39494ce839613ffba74279579268
- 2.AkshatJain- 0xb794f5ea0ba39494ce8399813ffba74279579268
- 3.ArpitJain- 0xb794f5ea0ba39494ba839613ffba74279579268
- 4.AshutosDwivedi- 0xb794f5ea0ab39494ce839613ffba74279785268

V. Conclusions

CRYPTO POLLS will be very helpful to institutions who want to conduct their elections from remote locations and also ensure their security. In conclusion, using blockchain technology for voting has the potential to increase transparency, security and accessibility in the voting process. By creating a decentralised and immutable record of votes, it could help prevent voter fraud, reduce the likelihood of errors and increase trust in the election results. It could also provide greater transparency and accessibility for remote or disabled voters and potentially streamline the counting process. Overall, while the blockchain-based voting system has the potential to revolutionize the way we conduct elections, it is important to approach it with caution and to thoroughly understand its feasibility and potential impacts before implementing it on a large scale.

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